

Relationship between Electronically Recorded Milk Flow Rate and Culling Reasons in Estonian Holstein and Estonian Red Cows

A. Tänavots^{1,2}, T. Kaart^{1,2}, H. Kiiman^{1,2}, E. Pärna^{1,2}, D. Pretto², M. Liiva^{1,2},
and H. Viinalass^{1,2}

¹Bio-Competence Centre of Healthy Dairy Products LLC (BioCC)

Kreutzwaldi 1, 51014 Tartu, Estonia; alo.tanavots@emu.ee

²Institute of Veterinary Medicine and Animal Sciences

Estonian University of Life Sciences

Kreutzwaldi 1, 51014 Tartu, Estonia

The aim of the study was to investigate the relationship between electronically recorded milk flow rate (AFR, kg/min) and culling reasons (CR) in Estonian Holstein (EHF) and Estonian Red (ER) cows.

The average AFR recorded in 2010–2014 for a total of 13,220 EHF and 949 ER cows belonging to 55 owners was analysed. The number of culled cows was 2,584 as of June 1, 2014. The average AFR of the groups was compared with the t-test. Kaplan-Meier curves and Cox proportional-hazards regression model/analysis with statistical package R were used to study the effects of AFR and breed on CR. The AFR of the EHF cows (mean±sd: 2.15±0.77) was significantly higher compared with that of the ER cows (2.06±0.67, $p<0.001$).

The AFR of culled cows was significantly lower than that of non-culled cows (2.01±0.73 vs 2.18±0.76, $p<0.001$). The lowest AFR (≤ 1.89) was recorded in the cows culled due to low milk yield and different udder and teat defects, while AFR 1.58 was registered in the cows with poor milkability. Cows culled due to mastitis had an average AFR (1.96). The CR of cows with higher AFR (2.02–2.15) was related to metabolic and reproductive disorders.

The survival rate of the EHF cows was the highest in the cows with the highest AFR (>3.5). The survival rate was the highest among the ER cows with medium (1.5–3.5) or the highest AFR.

The optimal AFR (lowest culling risk) was 4.5 in the EHF and 3.0 in the ER cows. Low milk yield and udder and teat defects were associated with low AFR. Higher survival rate was observed in the cows with higher AFR.

Acknowledgments: Bio-Competence Centre of Healthy Dairy Products LLC (project EU30002); Estonian Ministry of Education and Research (grant IUT8–1); ERMOS Grant (ERMOS104).